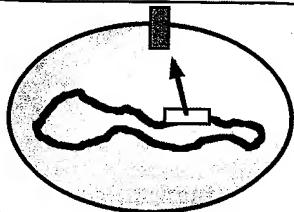


Conventional RB51 vaccine



Normal Brucella RB51
Vaccine

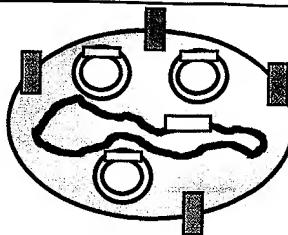
Vaccinate animals

Animal develops
Immune response

Challenge with
virulent Brucella

Certain level of
protection

Novel corexpression of
homologous antigen



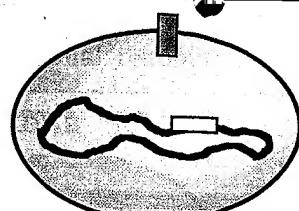
Brucella RB51 vaccine
overeexpressing
homologous antigen ()

Vaccinate animals

Animal develops
Immune response
but stronger
against the
overexpressed
homologous
antigen

Challenge with
virulent Brucella

Higher level of
protection
(20x or more)



**Normal Brucella RB51
Vaccine (current vaccine)**

Vaccinate animals

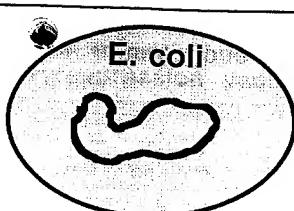
**Challenge with
virulent *Brucella***

Similar protection
both groups

They tested if both groups had an immune response to *Brucella* GroEL antigen (one of the many antigens of *Brucella*)

NO Antibodies YES
NO CMI YES

Conclusion:
GroEL is not protective



Brucella gro. gene

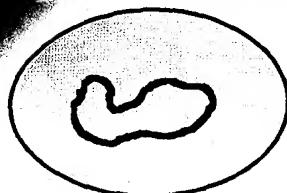
E. coli expresses
(produces) the
heterologous Brucella
GroEL

They purify the GroEL antigen from these E. coli and use the Brucella GroEL antigen in in vitro tests to determine if RB51 vaccination induced an immune response to GroEL (antigen is never used as a vaccine either)

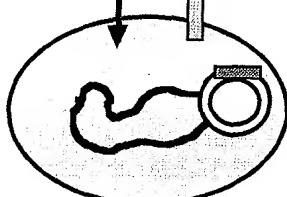
Stevens and coworker's work is not related to the overexpression of homologous antigens concept used to increase *Brucella* vaccine efficacy.

Traditional recombinant vaccines

Bacteria "X"



Heterologous antigen gene from bacteria "Y"



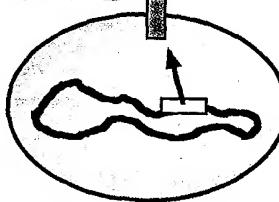
Bacteria "X" expresses (produces) the heterologous Bacteria "Y" antigen



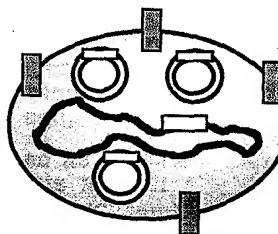
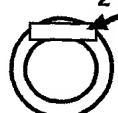
If used as vaccine protects against bacteria "Y" and may be "X"

Novel homologous overexpression vaccine

Bacteria "Z"



Homologous antigen gene from bacteria "Z"

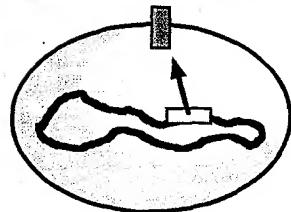


Bacteria "Z" overexpresses (overproduces) the homologous Bacteria "Z" antigen in large amounts



If used as vaccine protects against bacteria "Z" at much higher levels

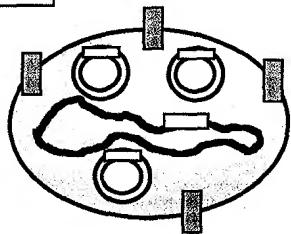
I. Bacteria "Z"



Protects against
bacteria Z

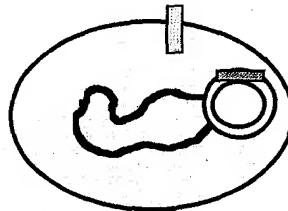
Contrasting Conventional recombinant vaccine expressing a heterologous antigen with our vaccine where homologous antigen overexpression is coupled to heterologous antigen expression.

II.



Protects against
bacteria Z much
better (20x or more)

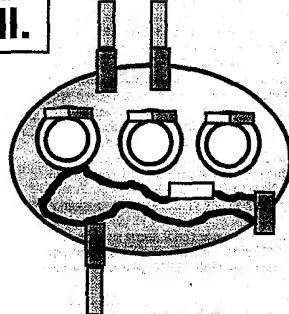
Bacteria "X"



Bacteria "X" expresses
(produces) the
heterologous Bacteria
"Y" antigen

If used as vaccine
protects against
bacteria "Y" * and
may be "X"
(* if Y antigen is a
protective antigen)

III.



Protects against
bacteria Z much
better (20x or more)
and protects
against bacteria

If bacteria X
expresses a
protective antigen
from bacteria Z it
may protect but the
levels will be similar
to I.